

**Enbridge Line 6B MP 608  
Marshall, Michigan**

**November 2010 Monthly Report**

**Prepared for USEPA and MDNRE**

**Enbridge Energy**

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## **Appendices**

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Appendix A: Level 2 and Level 4 Data Validation

Appendix B: Analytical Data Reports for Samples Taken Prior to November 1, 2010

## Acronyms and Abbreviations

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ATSDR	Agency for Toxic Substances and Disease Registry
“Crude oil related chemicals”	Chemicals of concern that could potentially come from crude oil as well as other sources
Division A&B Work Area	Work sites located in Divisions A & B.
DNRE	Michigan Department of Natural Resources and Environment
DNRE Order	Administrative Consent Order And Partial Settlement Agreement entered <i>In the Matter of Enbridge Energy Partners, L.P., and Enbridge Energy, Limited Partnership</i> , proceedings under the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.101 et seq.
EI’s	Enbridge Environmental Inspectors
EQ	Environmental Quality Company
HASP	<i>Health and Safety Plan</i>
“Hot Spot”	Area of heavy oil concentration
MDCH	Michigan Department of Community Health
MIOSHA	Michigan Occupational Safety and Health Administration
MM	Million
MRL	Minimum Risk Level
O&M	Operations and Maintenance
Order	USEPA Removal Administrative Order Under Section 311(c) of the Clean Water Act, issued on July 27, 2010 to Enbridge Energy Partners, L.P., Docket Number: CWA 1321-5-10-001
OSA	Office of the State Archaeologist
OSHA	Occupations Safety and Health Administration
PID	Photoionization detector

ppbv	Parts per billion by volume
ppmv	Parts per million by volume
QAPP	<i>Quality Assurance Program Plan</i>
RI	Remedial Investigation
RIWP	<i>Initial Remedial Investigation Work Plan MP 4.25 - 4.50, MP 4.50 LI, dated October 29, 2010.</i>
SAP	<i>Sampling and Analysis Plan</i>
SCAT process	Shoreline Cleanup Assessment Team (SCAT) process, which is used to assess oiled shorelines and is a part of the spill response operations.
SCRIBE	EPA software for management of data in the field, including chain-of-custody paperwork.
SHPO	State Historic Preservation Office
SOP	Standard Operating Procedure
STEL	Short term exposure limit, defined as “ <i>the employee’s 15-minute, time-weighted average exposure which shall not be exceeded at any time during a workday, unless another time limit is specified in a parenthetical notion below the limit.</i> ”
Supplemental Order	Supplement to Order for Compliance Under Section 311(c) of the Clean Water Act, issued by USEPA Region 5 on September 23, 2010 to Enbridge Energy Partners, L.P. <i>et al.</i> , Respondents, Docket No: CWA 1321-5-10-001
TCLP analysis	Toxicity Characteristic Leaching Procedure designed to determine the mobility of both organic and inorganic analytes present in liquid, solid, and multiphasic wastes.
TPH	Total Petroleum Hydrocarbon
TSD facility	Treatment, storage, or disposal facility
TWA	Time-weight average, defined as “ <i>the employee’s average airborne exposure in any 8-hour workshift of a 40-hour workweek that shall not be exceeded.</i> ”
USEPA	United States Environmental Protection Agency

USEPA START contractor	United States Environmental Protection Agency Superfund Technical Assessment & Response Team contractor.
VOCs	volatile organic compounds

## 1.0 Introduction

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This monthly progress report for the period of November 1 through November 30, 2010, is submitted to the United States Environmental Protection Agency (USEPA) and to the Michigan Department of Natural Resources and Environment (DNRE) to satisfy requirements from each that progress reports be submitted on the 27th of each month for activities completed during the prior month.

Paragraph 18 of the USEPA Removal Administrative Order Under Section 311(c) of the Clean Water Act, issued on July 27, 2010 to Enbridge Energy Partners, L.P., Docket Number: CWA 1321-5-10-001 (Order) as modified by Paragraph 6 of the Supplement to Order for Compliance Under Section 311(c) of the Clean Water Act, issued by USEPA Region 5 on September 23, 2010 to Enbridge Energy Partners, L.P. *et al.*, Respondents, Docket No: CWA 1321-5-10-001 (Supplemental Order) requires monthly progress reports to be submitted to USEPA commencing on December 27, 2010 and continuing monthly thereafter. (Supplemental Order, Paragraph 6(o)).

Paragraph 7.9 of the Administrative Consent Order And Partial Settlement Agreement entered *In the Matter of Enbridge Energy Partners, L.P., And Enbridge Energy, Limited Partnership*, proceedings under the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, MCL 324.101 et seq. (DNRE Order) requires Enbridge to submit to the DNRE written progress reports on the 27th day of each of month.

In addition to the work completed as described in this report, Enbridge also submitted the Health and Safety Plan (HASP), the Sampling and Analysis Plan (SAP) (Attachment 1a-1), and the Quality Assurance Program Plan (QAPP) (Attachment 1a-2) to the DNRE pursuant to Paragraph 7.1 of the DNRE Order. After approval of the SAP and QAPP, as provided in Paragraph 7.1 of the DNRE Order, monthly progress reports will then also include discussion of work completed pursuant to these plans. Similarly, Enbridge also submitted its Conceptual Site Model (Attachment 1a-3) to the DNRE and, as that document and any subsequent Schedule of Work is approved, activities conducted pursuant to those documents will also be reflected in the monthly reports.

## **2a.0 Air Sampling and Monitoring Activities**

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### **2a.1 Introduction**

This report describes the air monitoring and air sampling performed in the community (November 1 – 10, 2010) and in work areas (November 1 – 31, 2010). Personnel monitoring was also conducted on representative Enbridge contractors performing work activities related to the crude oil spill. The community includes all individuals living or working near areas potentially impacted by the crude oil spill. Work areas are those sites where workers are engaged in cleanup activities.

An addendum to the SAP for a phased reduction in air monitoring and air sampling was approved by USEPA and Unified Command in September 2010 (Attachment 2a-1). Air monitoring and air sampling data were reviewed weekly by Enbridge and USEPA to make decisions regarding reductions or increases in community air monitoring and sampling activities. Based on these data, USEPA and MDNRE approved discontinuation of community air monitoring and air sampling after November 10, 2010.

Throughout this report, the phrase “Crude Oil Related Chemicals” is used to refer to the chemicals of concern that could potentially come from crude oil as well as other sources.

### **2a.2 Work Completed for November 1 – 30, 2010**

- A total of 1,233 air monitoring readings for volatile organic compounds (VOCs), benzene and hydrogen sulfide (H<sub>2</sub>S) were collected throughout the community November 1 – 10, 2010. No VOCs, benzene or H<sub>2</sub>S were detected in the community. Community air monitoring ceased after November 10, 2010.
- Air monitoring for VOCs, benzene and H<sub>2</sub>S was also conducted in Baker Estates, the Squaw Creek community, the Ceresco Dam community, and near the Play Care Learning facility November 1 – 10, 2010. No VOCs, benzene or H<sub>2</sub>S was detected.
- A total of 3,094 air monitoring readings for VOCs, benzene and H<sub>2</sub>S were collected in Divisions A and B work areas. No H<sub>2</sub>S was detected at any location. VOCs were detected in 26 air readings and benzene was detected in 15 air readings. Benzene was detected only in work areas near the release site where excavated soil was staged before

transport. Respiratory protection was required when air monitoring indicated the presence of benzene.

- Additional air monitoring was performed for workers involved in geotube removal November 1- 9, 2010 (973 total air readings for VOCs, benzene and H<sub>2</sub>S) and vegetation removal November 7- 9, 2010 (121 total air readings for VOCs, benzene and H<sub>2</sub>S). No benzene was detected during geotube removal activities. There was one detect for benzene during vegetation removal on an island in the Kalamazoo River that was below Michigan OSHA standards.
- Personnel sampling was performed on representative workers performing various clean-up activities related to the crude oil spill. Sixty four 3M passive dosimeters were worn by personnel, they were then analyzed for benzene, ethyl benzene, toluene and xylene (BTEX). These data were collected November 1 – 10, 2010. No benzene or other Crude Oil Related Chemicals were detected.
- There were 24 air samples collected at oil collection sites in Divisions A, B, C and E November 1 – 10, 2010. No benzene or other Crude Oil Related Chemicals were detected at any tested locations.
- Air sampling was performed in Baker Estates and near the Play Care Learning facility November 1 – 10. No benzene or other Crude Oil Related Chemicals were detected.

### **2a.3 Air Monitoring Equipment and Methods**

Air monitoring was conducted for VOCs, H<sub>2</sub>S and benzene. “Air monitoring”, as used herein, is the term used when the air is tested using instruments capable of giving an immediate or “real-time” readout of the concentration of VOCs or specific chemicals (e.g. benzene) in the air at any given moment. VOCs are carbon based chemicals that evaporate easily at room temperature. Benzene is an example of a VOC. Air monitoring is often referred to as “real-time”.

Detection of VOCs during air monitoring is a non-specific indicator of the presence of airborne chemicals. For instance, benzene, ethyl benzene, toluene and xylene are all detected, if present at sufficient concentrations, as VOCs. Therefore, if VOCs are detected during air monitoring, then additional air monitoring is conducted using equipment capable of detecting specific

chemicals. Since benzene is the primary VOC of concern for human health in the event of many petroleum product spills, benzene specific air monitoring was also performed.

Hydrogen sulfide (H<sub>2</sub>S) may also be present in petroleum products and is a primary chemical of concern for human health. Therefore, air monitoring specific for H<sub>2</sub>S was performed.

Air monitoring was conducted using a number of instruments including the MultiRAE Plus (PID-photoionization detector), Gastec colorimetric detector tubes, UltraRAE (PID) and/or UltraRAE 3000 (PID). The air monitoring equipment used and the detection limit for each piece of equipment are shown in Table 2a-1.

<b>Instrument</b>	<b>Chemical</b>	<b>Detection Limit</b>
MultiRAE PID	VOCs	0.1 ppmv
MultiRAE PID	H <sub>2</sub> S	1.0 ppmv
UltraRAE PID with benzene sep filters	Benzene	0.10 ppmv
UltraRAE 3000 PID with benzene sep filters	Benzene	0.05 ppmv
Gastec detector tube with pump	Benzene	0.05 ppmv

**Table 2a-1 Summary of Air Monitoring Equipment**

The detection limit is the lowest level of chemical that can be accurately measured by the equipment. Air monitoring readings in which no chemical is detected are called non-detects. Non-detects are usually reported as values less than the detection limit (e.g. < 0.1 ppmv-part per million volume) rather than zero.

## **2a.4 Air Sampling Equipment and Methods**

“Air sampling,” as used herein, is a method that involves collecting air into some type of device. The device containing collected air is then sent to an accredited lab that identifies and measures the concentration of different chemicals in the air. Data from air sampling methods is not available immediately, like air monitoring, but air sampling methods allow one to evaluate the concentration of many different chemicals at levels of detection lower than in air monitoring methods.



Both 24 hour samples and grab samples were taken in November in the community. The 24 hour samples were taken using a canister (MiniCan) with a regulator that slowly collects air over a 24 hour period. MiniCans were also used to take Grab samples, these samples are collected over a period of several seconds. The 24 hour samples provide information about the concentration of a chemical over time, while a grab sample is useful for providing information about air concentrations in a short specific time frame.

Air samples collected in MiniCans were analyzed for a wide variety of VOCs using USEPA method TO-15 (Table 2a-2). The detection limit for benzene in these air samples is 5 ppbv (part per billion volume). The chemicals noted by an asterisk are reported as tentatively identified compounds (TICs) in the analysis.

Benzene	Heptane, n-
Butane, 2-methyl-*	Hexane, n-
Cyclohexane	Naphthalene
Cyclohexane, 1,3-dimethyl-*	Nonane*
Cyclohexane, 1,3-dimethyl-, cis-*	Octane*
Cyclohexane, butyl-*	Octane, 4-methyl-*
Cyclohexane, ethyl-*	Pentane, 2-methyl-*
Cyclohexane, methyl-*	Toluene
Cyclohexane, propyl-*	Trimethylbenzene, 1,2,4-
Decane*	Trimethylbenzene, 1,3,5-
Dodecane*	Undecane*
Ethylbenzene	Xylene, m&p-
Ethyltoluene, 4-	Xylene, o-

**Table 2a-2 List of Analytes using USEPA Method TO-15**

## 2a.5 Community Action (Screening) Levels

Various regulatory agencies met and together developed action levels for voluntary evacuation based on the concentration of crude-oil related chemicals in the air. These agencies included USEPA, Michigan Department of Community Health (MDCH), the Agency for Toxic Substances and Disease Registry (ATSDR), and the Calhoun County Public Health Department.

Benzene was one of the chemicals for which action levels were set. The current action level for benzene is to 6 ppbv.

The 6 ppbv value is based on the intermediate inhalation minimum risk level (MRL) developed for benzene by the ATSDR. ATSDR defines an MRL as follows:

*“An MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse non-cancer health effects over a specified duration of exposure.”* (<http://www.atsdr.cdc.gov/mrls/index.html>).

The 6 ppbv MRL was developed to be protective of health for individuals exposed to 6 ppbv benzene 24 hours per day for 15 – 364 days. In other words, no adverse health effects would be expected in individuals exposed continuously to 6 ppbv benzene for 15 – 364 days.

Action levels were also set for other Crude Oil Related Chemicals. These are shown in Attachment 2a-2.

## **2a.6 Occupational Standards**

Air monitoring and sampling data were compared to MIOSHA standards (Attachment 2a-3). MIOSHA adopted the federal occupational standards (OSHA) and has three occupational exposure limits, the time-weight average (TWA), the short term exposure limit (STEL) and a ceiling value. The TWA is defined as *“the employee’s average airborne exposure in any 8-hour workshift of a 40-hour workweek that shall not be exceeded.”* The STEL is defined as:

*“the employee’s 15-minute, time-weighted average exposure which shall not be exceeded at any time during a workday, unless another time limit is specified in a parenthetical notation below the limit. If another time period is specified, then the time-weighted average exposure over that time limit shall not be exceeded at any time during the workday.”*

The ceiling is defined as *“the employee’s exposure which shall not be exceeded during any part of the workday.”*

## 2a.7 All Community Air Monitoring (November 1 – 10, 2010)

Air monitoring was performed November 1 – 10, 2010 in community areas. During that time, 1,233 total air monitoring readings for VOCs, benzene and H<sub>2</sub>S were collected throughout the community. These data are summarized in Table 2a-3. Community specific air monitoring is described in Section 2a.9.

The locations of all community air monitoring for VOCs, benzene and H<sub>2</sub>S are shown in Figure 2a-1 found in Attachment 2a-4. No VOCs, benzene, or H<sub>2</sub>S were detected in the community; see Table 2a-3 below.

Chemical	Number of Readings	Number of Detects	Number of Benzene Detects Above Intermediate Action Level (6 ppbv)
VOCs	563	0	--
Benzene	109	0	0
H <sub>2</sub> S	561	0	--

**Table 2a-3 Summary of All Community Air Monitoring (November 1 – 10, 2010)**

### 2a.7.1 Baker Estates (November 1 – 10, 2010)

There were 41 total air monitoring readings for benzene and VOCs conducted in and around Baker Estates November 1 – 10, 2010 (Figure 2a-2 found in Attachment 2a-4). These data are summarized in Table 2a-4. No benzene or VOCs were detected.

Chemical	Number of Readings	Number of Detects	Number of Benzene Detects Above Intermediate Action Level (6 ppbv)
VOCs	32	0	--
Benzene	9	0	0
H <sub>2</sub> S	0	0	--

**Table 2a-4 Summary of Air Monitoring at or near Baker Estates (November 1 – 10, 2010)**

### 2a.7.2 Squaw Creek (November 1 – 10, 2010)

A total of 42 air monitoring readings were taken for H<sub>2</sub>S and VOCs (Figure 2a-3 found in Attachment 2a-4) in the Squaw Creek community November 1 – 10, 2010. These data are summarized in Table 2a-5. No H<sub>2</sub>S or VOCs were detected.

Chemical	Number of Readings	Number of Detects	Number of Benzene Detects Above Intermediate Action Level (6 ppbv)
VOCs	21	0	--
Benzene	0	0	--
H <sub>2</sub> S	21	0	--

**Table 2a-5 Summary of Air Monitoring in Squaw Creek (November 1 – 10, 2010)**

### 2a.7.3 Play Care Learning Center (November 1 – 10, 2010)

There were 30 total air monitoring readings taken for benzene, H<sub>2</sub>S and VOCs (Figure 2a-4 found in Attachment 2a-4) at or around the Play Care Learning Center November 1 – 10, 2010. These data are summarized in Table 2a-6. No benzene, H<sub>2</sub>S or VOCs were detected.

Chemical	Number of Readings	Number of Detects	Number of Benzene Detects Above Intermediate Action Level (6 ppbv)
VOCs	10	0	--
Benzene	10	0	0
H <sub>2</sub> S	10	0	--

**Table 2a-6 Summary of Air Monitoring at and around the Play Care facility (November 1 – 10, 2010)**

### 2a.7.4 Ceresco (November 1 – 10, 2010)

There were 40 total air monitoring readings for benzene, H<sub>2</sub>S and VOCs November 1 – 10, 2010 (Figure 2a-5 found in Attachment 2a-4). These data are summarized in Table 2a-7. No benzene, H<sub>2</sub>S or VOCs were detected.

<b>Chemical</b>	<b>Number of Readings</b>	<b>Number of Detects</b>	<b>Number of Benzene Detects Above Intermediate Action Level (6 ppbv)</b>
<b>VOCs</b>	19	0	--
<b>Benzene</b>	2	0	0
<b>H<sub>2</sub>S</b>	19	0	--

**Table 2a-7 Summary of Air Monitoring in Ceresco Community (November 1 - 10, 2010)**

## **2a.8 Air Monitoring at Work Sites**

Air monitoring was performed November 1 – 30, 2010 in work areas. Air monitoring was performed at work sites where workers were potentially exposed to Crude Oil Related Chemicals during various work activities related to cleanup. These work sites include the excavation work in Divisions A and B (Division A&B Work Area), geotube removal and vegetation removal. Air monitoring readings were used to evaluate exposure and to determine if respiratory protection was necessary in that work area. The data for each specific site are discussed in the following sections.

### **2a.8.1 Division A and B Work Areas (November 1 – 30, 2010)**

A total of 3,094 air monitoring readings for benzene, H<sub>2</sub>S and VOCs were collected November 1 – 30 in work areas near the site of the crude oil release. These data are summarized in Table 2a-8. The air monitoring locations for benzene, VOCs and H<sub>2</sub>S are shown in Figures 2a-6, 2a-7 and 2a-8 (Attachment 2a-4). Detects are shown as indicated in the Figure legend. Benzene detects were located primarily in areas in which excavated soil was staged prior to removal (Figure 2a-6 found in Attachment 2a-4). No H<sub>2</sub>S was detected.

<b>Chemical</b>	<b>Number of Readings</b>	<b>Number of Detects</b>	<b>Number of Benzene Detects Above MIOSHA TWA (1.0 ppmv)</b>	<b>Number of Benzene Detects above MIOSHA STEL (5 ppmv)</b>
<b>VOCs</b>	1033	26	--	--
<b>Benzene</b>	1031	15	3	0
<b>H<sub>2</sub>S</b>	1030	0	--	--

**Table 2a-8 Summary of Air Monitoring in Division A & B Work Areas (November 1 – 30, 2010)**

As stated in Section 2a.6, air monitoring readings for benzene are not directly comparable to occupational standards. The MIOSHA TWA is based on a time weighted average over 8 hours, however an air monitoring reading occurs over seconds to minutes. The available data indicates that the maximum detected values for benzene were not sustained over time and that workers were not overexposed to benzene in this area. Respiratory protection was required in any work area in which benzene was detected. In addition, the data from personnel monitoring described in Section 2a.9.4 indicates that workers were not overexposed to benzene as a result of work activities.

### **2a.8.2 Geotube Removal (November 1 – 9, 2010)**

A total of 973 air monitoring readings were taken for benzene, H<sub>2</sub>S and VOCs November 1 – 9, 2010 during geotube removal near Ceresco Dam. These data are summarized in Table 2a-9. Air monitoring locations for benzene, VOCs and H<sub>2</sub>S are shown in Figures 2a-9, 2a-10 and 2a-11 (Attachment 2a-4). No benzene or H<sub>2</sub>S was detected in air monitoring of geotube removal operations. There was a single VOC reading of 0.1 ppmv.

<b>Chemical</b>	<b>Number of Readings</b>	<b>Number of Detects</b>	<b>Number of Benzene Detects Above MIOSHA TWA (1.0 ppmv)</b>	<b>Number of Benzene Detects above MIOSHA STEL (5 ppmv)</b>
<b>VOCs</b>	328	1	--	--
<b>Benzene</b>	317	0	0	0
<b>H<sub>2</sub>S</b>	328	0	--	--

**Table 2a-9 Summary of Air Monitoring at Geotube Removal Sites (November 1 – 9, 2010)**

### **2a.8.3 Vegetation Removal (November 7 – 9, 2010)**

A total of 121 air monitoring readings for benzene, H<sub>2</sub>S and VOC were taken November 7 – 9, 2010 in areas where workers were removing vegetation. These data are summarized in Table 2a-10. Air monitoring locations for benzene, VOCs and H<sub>2</sub>S are shown in Figures 2a-12, 2a-13 and 2a-14. Benzene was detected in one air monitoring reading at a concentration of 0.05 ppmv. This single reading was well below the MIOSHA TWA (Table 2a-10).

<b>Chemical</b>	<b>Number of Readings</b>	<b>Number of Detects</b>	<b>Number of Benzene Detects Above MIOSHA TWA (1.0 ppmv)</b>	<b>Number of Benzene Detects above MIOSHA STEL (5 ppmv)</b>
<b>VOCs</b>	41	0	--	--
<b>Benzene</b>	40	1	0	0
<b>H<sub>2</sub>S</b>	40	0	--	--

**Table 2a-10 Summary of Air Monitoring during Vegetation Removal (November 7-9, 2010)**

## **2a.9 Air Sampling in Communities and Work Sites**

In November, air sampling was performed at community locations including Baker Estates and the Play Care Learning Center. Air sampling was also performed at oil collection sites and for personnel during work activities related to the crude oil spill.

Air sampling using 24 hour regulated evacuated canisters (MiniCans) was conducted at oil collection sites November 1 – 10, 2010. These 24 hour samples were collected daily at selected oil collection sites in Divisions A, B, C and E (Figure 2a-17 located in Attachment 2a-4). Daily sampling locations near each oil collection site were selected based on site conditions, including the nearest community receptor downwind of operations. Air samples were analyzed for a variety of VOCs as described in Section 2a.4.

In addition, personnel monitoring was conducted on workers engaged in crude oil related cleanup activities using 3M passive dosimeter badges November 1 – 10, 2010.

### **2a.9.1 Baker Estates (November 1 – 10, 2010)**

The number and types of air samples collected at Baker Estates November 1 – 10, 2010 is summarized in Table 2a-11. Sampling locations are shown in Figure 2a-15 which is found in Attachment 2a-4. No benzene or other Crude Oil Related Chemicals were detected in any sample.

	Number of Samples	Number of Benzene Detects	Number of Benzene Detects above Acute Action Level (60 ppbv)	Number of Benzene Detects above Intermediate Action Level (6 ppbv)
24 Hour MiniCan	22	0	0	0
Grab MiniCan	20	0	0	0

**Table 2a-11 Summary of Air Samples Collected at Baker Estates (November 1 – 10, 2010)**

### **2a.9.2 Play Care (November 1 – 10, 2010)**

Ten 24-hour air samples were collected at the Play Care Facility November 1 – 10, 2010. These data are summarized in Table 2a-12. Sampling locations are shown in Figure 2a-16 (Attachment 2a-4). No benzene or other Crude Oil Related Chemicals were detected.

	Number of Samples	Number of Benzene Detects	Number of Benzene Detects above Acute Action Level (60 ppbv)	Number of Benzene Detects above Intermediate Action Level (6 ppbv)
24 Hour MiniCan	10	0	0	0

**Table 2a-12 Summary of Air Samples Collected at Play Care (November 1 – 10, 2010)**

### **2a.9.3 Oil Collection Sites (November 1 – 10, 2010)**

The number of 24 hour air samples collected November 1 – 10, 2010 at oil collection sites is summarized in Table 2a-13. The locations of oil collection sites are shown in Figure 2a-17 which is found in Attachment 2a-4. No benzene or other Crude Oil Related Chemicals were detected in any sample.

	Number of Samples	Number of Benzene Detects	Number of Benzene Detects Above MIOSHA TWA (1.0 ppmv)	Number of Benzene Detects above MIOSHA STEL (5 ppmv)
Division A	8	0	0	0
Division B	8	0	0	0
Division C	6	0	0	0
Division E	2	0	0	0

**Table 2a-13 Summary of Air Monitoring Conducted at Oil Collection Sites (November 1 – 10, 2010)**



#### **2a.9.4 Personnel Sampling (November 1 – 10, 2010)**

A total of 64 3M passive dosimeters worn by Enbridge contractors during activities related to crude oil cleanup were analyzed November 1 – 10, 2010. No benzene or other Crude Oil Related Chemicals were detected.

#### **2a.10 Analytical Data Reports**

All air monitoring and air sampling data is attached in Attachment 2a-5.

#### **2a.11 Work Completed**

Air monitoring and air sampling continued in community and work areas potentially impacted by the crude oil release.

- Air monitoring continued in the community November 1 – 10, 2010. A total of 1,233 air monitoring readings were taken for benzene, H<sub>2</sub>S and VOCs throughout the community.
- Focused air monitoring continued in four community locations; Baker Estates, the Play Care Learning Center, Squaw Creek and Ceresco.
- A total of 4,188 air monitoring readings for benzene, H<sub>2</sub>S, and VOCs were taken at during three work activities related to the crude oil spill. These work activities included work areas associated with the initial release site in Divisions A and B, geotube removal and vegetation removal.
- A total of 32 24-hour air samples and 20 grab samples were collected at Baker Estates and the Play Care Learning Center (November 1 – 10, 2010).
- Twenty four 24-hr air samples were collected in Divisions A, B, C and E November 1 – 10, 2010 and analyzed for VOCs using USEPA method TO-15.
- Sixty four 3M dosimeter badges worn by Enbridge contractors were analyzed for crude oil related VOCs.

#### **2a.11 Work Planned**

No air monitoring or sampling is planned for December 2010 except personnel monitoring as requested.

## **2b.0 Surface Water Monitoring Activities**

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### **2b.1 Introduction**

This section describes surface water monitoring activities performed during the month of November pursuant to the requirements set forth by the EPA Removal Administrative Order dated July 27, 2010, the Supplemental Order dated September 23, 2010, and Section 7.5 of the State of Michigan Department of Natural Resources Consent Order dated November 1, 2010.

### **2b.2 Work Completed**

Work was completed in accordance with the Sampling and Analysis Plan dated August 2, 2010 (Revised August 17, 2010 per U.S. EPA August 17, 2010 Notice of Approval with Modifications) and the Recommendation for reduction in Surface Water and Sediment Sampling, EPA Memorandum dated October 22, 2010. This work consisted of collecting a weekly surface water sample from 9 locations in the Kalamazoo River between the Talmadge Creek confluence and Morrow Lake, 21 locations within Morrow Lake, and one location immediately downstream of Morrow Lake in the Kalamazoo River. The sample location identification, location description, and latitude and longitude coordinates in decimal degrees for each monitoring location is provided in Table 2b-1.

<i>Location ID</i>	<i>Location Description</i>	<i>Latitude</i>	<i>Longitude</i>
SW-111	Morrow Lake	42.278248	-85.452362
SW-931	Morrow Lake	42.277946	-85.452568
ML-1	Morrow Lake	42.279011	-85.458466
ML-2	Morrow Lake	42.279224	-85.455406
ML-3	Morrow Lake	42.277012	-85.4571
ML-4	Morrow Lake	42.27417	-85.460007
ML-5	Morrow Lake	42.274372	-85.456184
SW-932	Morrow Lake	42.274738	-85.478043
SW-935	Morrow Lake	42.278255	-85.472069
ML-7	Morrow Lake	42.281063	-85.480469
ML-9	Morrow Lake	42.276756	-85.483139
ML-10	Morrow Lake	42.276375	-85.47892
SWKR3840C01	Morrow Lake	42.277886	-85.464807
SWKR3840C02	Morrow Lake	42.274991	-85.464724
SW-936	Morrow Lake	42.276611	-85.453972
SW-937	Morrow Lake	42.2812	-85.486115
ML-8	Morrow Lake	42.279621	-85.482033
SW-109	Morrow Lake	42.28286	-85.489372
SW-933/Node106	Morrow Lake	42.281902	-85.485871
ML-6	Morrow Lake	42.282177	-85.486198
SW-112	Downstream side Morrow Dam	42.283659	-85.498262
SWKR3980C01	Morrow Lake Dam	42.282665	-85.491508
SW-105	15 Mile Bridge	42.25825	-84.998184
SW-115	Fort Custer State Park	42.324341	-85.358049
SWKR0540C01	Mile Point 5.4, O & M Control Point	42.266558	-85.054032
SWKR0600C01	Mile Point 6.0, O & M Control Point	42.270887	-85.063948
SW-120	Shady Bend Campground, Augusta	42.347423	-85.329214
SWKR1948C01	Mile Point 19.4, O & M Control Point	42.343617	-85.243147
SWKR1480C01	Mile Point 14.8, O & M Control Point	42.304726	-85.183417
SWKR1565C01	Mile Point 15.5, O & M Control Point	42.312748	-85.184869
SW-110	35th St Bridge, Galesburg	42.280206	-85.429028

**Table 2b-1 Surface Water Monitoring Locations**

Surface water was continuously monitored for the presence of crude oil constituents at two locations near the east and west ends of Morrow Lake using remote, telemetering water quality sensors (Eureka Manta probes). Surface water quality parameters collected by the Manta units were uploaded to the USEPA SCRIBE database. 151 surface water samples (plus 21 field duplicates) were collected from 12 locations during November 2010. None of these surface water samples exceeded Michigan Rule 57 water quality standards.

Laboratory results of analytical results received in November are attached in Attachment 2b-1.

### **2b.3 Work Planned for December 2010**

Proposed work for December consists of performing continued surface water quality monitoring activities according to the Work Plans referenced in Section 2b.1.

It is anticipated that inclement weather conditions, specifically freezing of the surface water at Morrow Lake and the Kalamazoo River may temporarily suspend sample collection at many locations. The sampling teams will conduct weekly reconnaissance at each sampling location to determine if a sample can be safely collected. The field team will document site conditions (i.e. photographs, descriptions of safety hazards, ice description) if it is determined that a sample cannot be collected.

The Manta monitoring units located in Morrow Lake will be removed immediately before ice begins forming. The water temperature will be monitored daily to coordinate the timing for unit removal. Laboratory analytical results received in December will be submitted with the December progress report.

## 2c.0 Sediment Monitoring Activities

### 2c.1 Introduction

This section describes sediment monitoring activities performed during the month of November pursuant to the requirements set forth by the EPA Removal Administrative Order dated July 27, 2010 and the Supplemental Order dated September 23, 2010, and Section 7.5 of the State of Michigan Department of Natural Resources Consent Order dated November 1, 2010.

### 2c.2 Work Completed

Work was completed in accordance with the Sampling and Analysis Plan dated August 2, 2010 (Revised August 17, 2010 per U.S. EPA August 17, 2010 Notice of Approval with Modifications) and the Recommendation for reduction in Surface Water and Sediment Sampling, EPA Memorandum dated October 22, 2010. This consisted of collecting a bi-weekly sediment sample from 9 locations in the Kalamazoo River between the Talmadge Creek confluence and Morrow Lake, and 3 locations within Morrow Lake. Table 2c-1 depicts the sample location identification, location description, and latitude and longitude coordinates in decimal degrees for each location.

<i>Description</i>	<i>Location</i>	<i>Latitude</i>	<i>Longitude</i>
SW-931	Morrow Lake	42.277946	-85.452568
SW-936	Morrow Lake	42.276611	-85.453972
SW-937	Morrow Lake	42.2812	-85.486115
SW-105	15 Mile Bridge	42.25825	-84.998184
SW-115	Fort Custer State Park	42.324341	-85.358049
SWKR0540C01	Mile Point 5.4, O & M Control Point	42.266558	-85.054032
SWKR0600C01	Mile Point 6.0, O & M Control Point	42.270887	-85.063948
SW-120	Shady Bend Campground, Augusta	42.347423	-85.329214
SWKR1948C01	Mile Point 19.4, O & M Control Point	42.343617	-85.243147
SWKR1480C01	Mile Point 14.8, O & M Control Point	42.304726	-85.183417
SWKR1565C01	Mile Point 15.5, O & M Control Point	42.312748	-85.184869
SW-110	35th St Bridge, Galesburg	42.280206	-85.429028

**Table 2c-1 Sediment Sample Locations**

27 sediment samples (plus 1 field duplicate) were collected from 12 locations during November 2010. A figure showing these locations is attached as Attachment 2c-1. One 2-methylnaphthalene exceedance occurred at location SWKR0540C01 and one phenanthrene

exceedance occurred at location SWKR0540C01. Laboratory results of analytical results received in November are attached in Attachment 2c-2.

### **2c.3 Work Planned for December 2010**

Laboratory analytical results received in December will be submitted with the December progress report. Proposed work for December will consist of performing continued sediment monitoring activities according to the Work Plans referenced in Section 2c.1.

It is anticipated that inclement weather conditions, specifically freezing of the surface water at Morrow Lake and the Kalamazoo River may temporarily suspend sample collection at many locations. The sampling teams will conduct weekly reconnaissance at each sampling location to determine if a sample can be safely collected. The field team will document site conditions (i.e. photographs, descriptions of safety hazards, ice description) if it is determined that a sample cannot be collected.

## 2d.0 Potable Water Investigation Activities

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### 2d.1 Introduction

In November, residential well sampling continued in accordance with the *Drinking Water Well Supplement to the Sampling and Analysis Plan* Revised September 28, 2010. Additionally, one round of groundwater monitoring and one round of water level measurements were completed. This is part of the long term monitoring work described under the *Supplement to the Sampling and Analysis Plan Referred to as Work Plan for Evaluating the Potential Impact of Released Oil on Groundwater used for Drinking Water* Revised October 7, 2010.

### 2d.2 Work Completed

#### 2d.2.1 Residential Drinking Water Wells

No additional work plans were submitted for proposed new work pursuant to the the *Drinking Water Well Supplement to the Sampling and Analysis Plan* Revised September 28, 2010, with the exception of verbal agreement among Enbridge and Calhoun and Kalamazoo County Health Departments to alter the sampling frequency of wells as described below.

Multiple sampling events were completed for the 150 residential wells that have been initiated into the Potable Well Monitoring Program. Approximately 40 wells were sampled on a bi-weekly basis during the month of November (two sampling events having occurred) and analyzed for the initial parameter list found in the *Sampling and Analysis Plan* dated August 2, 2010 with modifications approved by the USEPA on August 17, 2010. On November 3, 2010, Enbridge received approval to revise the sampling frequency for wells that did not display detections of potential crude oil constituent parameters (with the exception of iron) for two consecutive sampling events. Approval of the altered frequency was also contingent upon the completion and review of the hydrogeologic study. As such, approximately 90 wells were sampled during the first week of November for the target sampling parameter list.

Approximately 20 wells which are deemed eligible according to the *Supplement* are currently not being sampled due to inaccessibility, winterization, or refusal of permission by the landowner. The well registry and validation process has continued for homes where landowners have been unable to be contacted.

Laboratory reports of analytical results received in November can be found in Attachment 2d-1. Laboratory analytical results received in December will be submitted with the December progress report.

Results of this residential drinking well monitoring event will be described in public health meeting weekly reports and map books.

## **2d.2.2 Groundwater Monitoring**

One round of groundwater sampling was conducted and one round of water levels was collected from five monitoring wells near Ceresco Dam. This monthly groundwater monitoring event was prescribed in *Supplement to the Sampling and Analysis Plan Referred to as Work Plan for Evaluating the Potential Impact of Released Oil on Groundwater used for Drinking Water* Revised October 7, 2010.

Laboratory results of analytical results received in November can be found in Attachment 2d-2. Laboratory analytical results received in December will be submitted with the December progress report.

## **2d.3 Reporting**

### **2d.3.1 Residential Drinking Water Wells**

In November, daily and weekly reports were submitted to the Calhoun and Kalamazoo County Public Health Departments. As sampling events occurred, daily updates were provided to the counties via the AECOM SharePoint site as to the properties that were sampled that day. In addition, weekly reports were provided to the MDNRE, USEPA, and the public health departments which include updates on well locations, access status, sampling data, and landowner letters. The validated data was transmitted to the well owners via letters identifying potential crude oil constituent detections and non-crude oil constituent exceedances. As validated data was received from the labs, it was uploaded to SCRIBE to be viewed by the MDNRE, USEPA, and Calhoun and Kalamazoo County Health Departments.



### **2d.3.2 Groundwater Monitoring**

Following the completion of *Evaluation of Potential Impact of Released Oil on Groundwater used for Drinking Water (Hydrogeological Evaluation Report)* on October 30, 2010, no additional completion reports have been submitted describing this work.

## **2d.4 Work Planned for December 2010**

### **2d.4.1 Residential Drinking Water Wells**

The residential drinking water sampling is planned to continue in the December reporting period (Attachments 2d-3, 2d-4).

### **2d.4.2 Groundwater Monitoring**

The monthly groundwater monitoring work is planned to continue in the December reporting period (Attachments 2d-3, 2d-4).

## 2e.0 Operations and Maintenance Activities

### 2e.1 Introduction

During November 2010, operating period Enbridge Environmental Inspectors (EI's) and U.S. Environmental Protection Agency (USEPA) representatives inspected up to 95 operation and maintenance points (Figures 2e-1 and 2e-2) on the river (including surface and subsurface control points) as well as two rounds of submerged oil locations (35 total locations from the submerged oil list) (Attachment 2e-2). These locations were inspected based on their current inspection frequency and in accordance to the daily task that was recommended by the Enbridge EI's and USEPA representatives. Table 2e-1 summarizes the operation and maintenance phases on the river as of November 30, 2010.

<b>Division / Group</b>	<b>Active Work Still Needed</b>	<b>Monitoring</b>	<b>Cleared</b>	<b>Closed Out</b>
B	0	2	0	0
C-1	5	7	0	18
C-2	1	5	0	8
C-3	4	4	0	8
C-4	1	6	0	8
D	0	2	0	3
E	0	8	0	5
<b>Total</b>	<b>11</b>	<b>34</b>	<b>0</b>	<b>50</b>

**Table 2e-1 O&M Phase Summary**

### 2e.2 Work Completed

In November, the following work plans were submitted:

- Mile Post 3.25 Island A, Operation and Maintenance Interim Remedial Work Plan (Third revision) was submitted to the MDNRE and EPA on November 14, 2010 and approved. (Attachment 2e-1)
- Operation and Maintenance Excavation Work Plan Mile Post 4.50L1, LDB (Third revision) was submitted to the MDNRE and EPA on November 4, 2010 and approved. (Attachment 2e-1)
- Operation and Maintenance Excavation Work Plan Mile Post 10.75 L1, LDB (revised) was submitted on November 18, 2010 and approved. (Attachment 2e-1)

- Operation and Maintenance Excavation Work Plan Mile Post 10.75L2, LDB was submitted on November 7, 2010 and approved. (Attachment 2e-1)
- Segment 11.0 RDB Operation and Maintenance Excavation Work Plan Modification was submitted on November 14, 2010 and approved. (Attachment 2e-1)

Reassessments were completed in areas that had been identified on the operation and maintenance list (Attachment 2e-1) as high priority areas requiring remedial activities beyond those provided under the SCAT process. Reassessment activities included a site visit by representatives of Enbridge and USEPA, characterization and delineation of oil impacted soil, estimating the volume of soil to be excavated, wetlands assessments, tree inventories, cultural inventories and right-of-way confirmation. In some areas, analytical samples were collected from inside and outside the delineated area for comparison. These samples were analyzed for Crude Oil Related Chemicals. The areas where reassessments were conducted in November include: 2.50L1, 2.75I1, 3.25R1, 3.25IA, 3.75LIC/RIC, 4.50L1, 8.50 L2, 9.50L1, 10.50L2, 10.75L1, 10.75L2, 11.25R1, 11.25R2, 11.50R1, 13.5L2, 15.00L1, 21.50R1, 33.00L1, 5.55N, 28.25R1, and 3.25IA.

Work Plans were written (as described above) and implemented based on the results of the reassessments. Excavation Work Plans that were implemented in the following areas in November: 4.50L1, 10.75L2, 5.55N, 13.50L2, 28.25R1, 33.00L1, 3.25IA, 11.00R1, and 10.75L1.

Laboratory results of analytical results received in November are attached (Attachment 2e-4). Results of this work will be described in reports submitted in conjunction with a future monthly progress report.

### **2e.3 Close-out Reports**

Enbridge and USEPA representatives cleared and closed-out 11 locations in the month of November. These locations are color coded dark green on the daily tracking spreadsheet and will remain on the spreadsheet for tracking purposes and for possible issues that may arise after a large rain event or thaw. The locations closed-out for this operating period are as follows: 2.25L1 (11/01/10), 6.00R3 (11/04/10), 6.00R4 (11/01/10), MP6 (11/4/10), 10.50R1 (11/4/10),

11.00L2, (11/7/10), 12.00L2 (11/7/10), 12.50L1 (11/29/10), 14.00LR1 (11/7/10), 21.00L1 (11/4/2010), and E0.5 (11/4/10). These close-out reports are included as Attachment 2e-5.

#### **2e.4 Work Planned for December 2010**

Reassessment and excavation work is planned to continue in the December reporting period. Laboratory analytical results received in December will be submitted with the December progress report (Attachment 2e-6).

## **2f.0 Remedial Investigation Activities**

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### **2f.1 Introduction**

In November, remedial investigation activities were conducted at A4, MP 4.50 L1 and MP 10.75 L1. Remedial investigation activities were implemented in accordance with *Initial Remedial Investigation Work Plan (RIWP) MP 4.25 – 4.50, MP 4.50 L1*, dated October 29, 2010 (Attachment 2f-1) and *Initial Remedial Investigation Work Plan MP 10.50 – 10.75, MP 10.75 L1*, dated October 29, 2010. (Attachment 2f-2)

### **2f.2 Work Completed**

#### **2f.2.1 A1 – A4**

In accordance with the approved RIWP and following remedial investigations completed in October 2010,

- 21 groundwater samples were collected.

#### **2f.2.2 MP 4.50 L1**

In accordance with the approved RIWP, the following work activities were completed:

- 10 soil borings were installed; soil borings were surface soil samples due to the extent of excavation;
- 10 soil samples were collected; and,
- 3 pore water samples were collected.

#### **2f.2.3 MP 10.75 L1**

In accordance with the approved RIWP, the following work activities were completed:

- 6 soil borings were installed;
- 8 soil samples were collected; and,
- 2 monitoring wells were installed.

#### **2f.2.4 Analytical Results**

Laboratory analytical reports received in November are attached as Attachment 2f-3. Laboratory analytical results received in December will be submitted with the December progress report.

Analytical results of this work will be described in completion reports to be submitted in the next reporting period.

#### **2f.3 Completion Reports**

No completion reports for RIs were submitted in November. Reports for the work completed in November are currently in development and will be submitted once all analytical data is received and evaluated.

#### **2f.4 Work Planned for December 2010**

Planned activities for the next reporting period are as follows:

- Complete remedial activities at MP 4.50 L1;
- Complete remedial activities at MP 10.75 L1;
- Conduct remedial activities at MP 2.75 R1; and,
- Conduct remedial activities at MP 11.00 R1.

## 2g.0 River Bank Erosion Control & Restoration Activities

### 2g.1 Introduction

In November, erosion control and bank restoration activities were completed in ten areas. Sites requiring erosion control and bank restoration activities were identified with representatives of Enbridge and the DNRE. Sites were ranked and scored on the basis of existing and potential for future erosion. Wetland functional assessments, restoration work and monitoring of restored areas were also completed in areas as described in Section 2g-2.

### 2g.2 Work Completed

Work was completed in accordance with *Enbridge Line 6B Incident Kalamazoo River Bank Erosion Assessment and Action Plan* dated October 7, 2010 and revised October 19<sup>th</sup>, October 26<sup>th</sup> and October 28<sup>th</sup>, 2010 (Attachment 2g-1). This work is summarized in Table 2g-1below:

Kalamazoo River Segments	Unique Identification	Work Completed
MP		
6.00-6.25	24 R	Seventy-five feet of shoreline were restored using log deflectors and brush wattles.
7.25-7.50	32 L	Approximately 270' of shoreline were restored. Placed stone, clay loam, coir blocks. Seeded and restored
9.25-9.50	42 R	Placed stone, clay loam, soil lifts, and installed a lunger structure for fish habitat. Seeded and restored.
9.75-10.00	45 Island	Approximately 140' of coir log were installed on the downstream end of the island.
10.00-10.25	46 R	Approximately 110' of coir log were installed.
10.30 - 10.35	47 L	Approximately 135' of coir log were installed.
11.60 - 11.70	56 L	Approximately 170' of coir log were installed.
12.25-12.50	160 L	An existing tree putting stress on the LDB was relocated to the RDB and positioned to deflect the current away from the eroding bank. Tree Removal, log deflectors and brush wattles installed.
12.60 - 12.65	261 R	Log deflectors and approximately 220' brush wattles were installed as bank protection.
25.30 - 25.40	68 L	Approximately 160' of shoreline was restored through the strategic placement of brush wattles and log deflectors along and outside bend of the river on the LDB.

**Table 2g-1 Kalamazoo River Erosion Control Work Areas**

Areas where the Erosion Control and Restoration work was completed are shown in Figures 2g1 – 2g9. Other restoration activities completed in November included: Weekly post-construction monitoring on restored areas of Talmadge Creek, restoration of yards, staging areas, and private property as needed, daily sediment monitoring in a sediment trap located immediately upstream of the confluence of the Talmadge Creek and the Kalamazoo River, and design and implementation of stabilization plan for the Marshall Containment Station detention basin. Wetland functional assessments or assessments for potential restoration were performed in the following locations: MP 2.75 – Island A, MP 3.75 – Island C, MP 4.5L1, MP 9.50L1, MP 11.00R1, MP 11.25R1, MP 13.50 LDB.

### **2g.3 Reports**

A geomorphologic study titled, *Kalamazoo River Island A*, dated 11/29/2010, was submitted to the MDNRE and the EPA (Attachment 2g-2).

### **2g.4 Work Planned**

River bank erosion control and restoration activities are planned to continue in the December 2010 reporting period.



## 2h.0 Temporary Facility Restoration and Demobilization

### 2h.1 Introduction

In November, temporary facility restoration and demobilization activities were completed in the following categories: Public Parks/ Access Areas, River Access, Soil Staging and Decontamination Areas.

### 2h.2 Work Plans

There were no Work Plans submitted for temporary facility restoration and demobilization in November 2010.

### 2h.3 Work Completed

#### 2h.3.1 Public Parks/ Access Areas

Fifteen Public Parks/Access Areas were identified and soil samples were collected in accordance with *Public Park/Access Area Assessment Work Plan, Enbridge Energy, Limited Partnership, Line 6B Incident, Marshall, Michigan, October 11, 2010/ Revised October 16, 2010*. Locations are included in Table 2h-1:

	Kalamazoo River MP	Location/Identification Name
Division C	2.00-2.25	15 Mile Road Bridge
	2.50- 3.00	Squaw Creek Subdivision
	5.25-5.75	Ceresco Dam Boat Launch
	8.75-9.50	Historic Bridge Park
	10.75-11.0	Raymond Road Bridge
	13.50-13.75	Baker Mobile Home Park at Beadle Lake Road
	14.50-15.00	Dirt road to landscape business
	14.00-15.00	Riverside Country Club Area (Winding Way)
	15.25-16.00	Burnham Bridge
Division D	16.75-17.50	Corner of Hayes and Parish
	18.00-19.00	Jackson Street Linear Park
	21.25-21.50	Custer Bridge
	21.25-23.75	Legacy Wildlife Preserve
Division E	37.25-37.75	River Oaks County Park
	38.25-38.50	MDNRE Boat Launch on Morrow Lake

**Table 2h-1 Public Park/Access Areas**

Laboratory of analytical results received in November are attached (Attachment 2h-1). Figure 2h-1 shows the locations of the Public Parks/Access Areas and exceedances.

### **2h.3.2 River Access and Soil Staging and Decontamination Areas**

Approximately 70 work sites were established for oil release response activities to provide for river access, staging of equipment and materials, decontamination, waste staging and similar activities. As work was completed, the sites have undergone decommissioning and closure activities to remove equipment and consumables, to prepare the sites for winter and/or to restore the site to pre-response conditions. After activities ceased, and/or as sites were vacated, verification soil samples were collected for laboratory analysis in accordance with the Michigan Department of Natural Resources and Environment (MDNRE) requirements (Op. Memo No. 2), for comparison to the Part 201 generic residential criteria. MDNRE was notified of each sampling event. The sampling activities were completed in accordance with the pending work plan for *Soil Staging, Decontamination and River Access Site Closure Plan*.

Laboratory of analytical results received in November are attached (Attachment 2h-1). Figure 2h-2 shows the locations of the river access and soil staging and decontamination areas. Planned activities for the next reporting period include verification soil sampling for additional sites.

#### **2h.3.2.1 River Access and Other Work Areas**

Table 2h-2 identifies the location and number of verification soil samples collected and analyzed for decommissioning of River Access and Other Work Areas during November 2010.

**Table 2h-2**  
**Line 6B; Marshall, MI**  
**List of River Access and Other Work Areas**

<b>River Access Site Name</b>	<b>Milepost</b>	<b>Access Point</b>	<b>Number of Sample Results Received in November 2010</b>
<b>Division C</b>			
C0.0 Parking	2.2	C0.0	2
C0.0	2.25	C0.0	
C0.0	2.25	C0.0	
Gildea	2.75	117 FRIENDSHIP LANE	0
Island Access	4.25		0
C0.3	4.75	C0.3	0
C0.4	5.1	12420 C Dr N	4
C0.5 Boom	5.4	C0.5	0
C0.5 Boat Ramp	5.4	C0.5	0
C0.5 Decon	5.4	C0.5	0
C0.5 Dredge Spoil	5.5	C0.5	0
C1 Consumers Energy	5.8	C1	0
C1 Ceresco Power	5.8	C1	
C1 Fowler access	5.8	C1	
C1 Parking	5.8	C1	
C1 Boom	6	C1	
C1 Access	6	C1	
C1 Descending Rt Bank	6.25	C1	
C1.x Access	6.6	C1	0
C Driver Access	7.3	13858 11 Mile Road	0
C1.5 Access	7.5	C1.5	0
C1.5 Parking	7.5	C1.5	
C1.5 Ramp	7.5	C1.5	
C2 Access	9.15	C2	0
C3 Access	9.4	C3	8
C3 Access	9.4	C3	
C3.2 Parking	9.8	C3.2	0
C3.2 Access/Ramp	9.85	C3.2	
C3.7 Access	11.25	C3.7	0
Helispot H3.8	11.5	H3.8	0

River Access Site Name	Milepost	Access Point	Number of Sample Results Received in November 2010
C3.x	11.8	2224 E Columbia Ave	0
C3.9	12.2	C3.9	0
C4	12.55	848 S Raymond Rd	0
C4	12.55	upstream of C-176	
C4.8 River	13.25	C4.8	0
C4.8 Parking	13.25	C4.8	
C4.85	14	C4.85	0
C5	14.8	C5	0
C6	15.4	C6	0
C-vandenbrink	16.5	258 W Hamblin Ave	0
C-coppock	16.6	292 W Hamblin Ave	0
<b>Division D</b>			
D0.5	17.6	842 Jackson St W	1
D1 Sediment Curtain	18	898 Jackson St W	1
D2 Boat Ramp	18.7	1364 Jackson St W	17
D2.5 Access point	18.9	1502 Jackson St W	18
D3 Boat Ramp	19.4	1724 Jackson St W	14
D5 Boom Access	21.25	516 Custer Dr	2
D5NW (C&M Const.)	21.25		0
<b>Division E</b>			
E0.1 Containment Access	24.6	1936 River Rd W	0
E0.5 Gabion Baskets	26.4	E0.5	0
E0.5-2	26.8	E0.5	0
E0.5 Boom	26.9	E0.5	0
E0.5 Decon	26.9	E0.5	
E0.5 Site Access	26.9	E0.5	
E0.6 Containment access	28.2	15038 River Rd	0
E0.8 Containment access	28.8	436 Michigan 96	0
E1 Boom Access	29.4	Church St	8
E2 Boat Ramp	30	Fort Custer Rec Area	12
E2.3 Containment access	34.35	Climax Drive	0
E2.4 Containment access	34.55	11572 E Michigan Ave	0
E3 Boat Ramp/Boom	35.2	186 E Michigan Ave	8
E3.5 Containment access	36.55	S 35th St	0
E4 Ramp/Boom access	37.75	9424 E Michigan Ave	0
E4.5 Ramp	38.5	Plaza Avenue	12

<b>River Access Site Name</b>	<b>Milepost</b>	<b>Access Point</b>	<b>Number of Sample Results Received in November 2010</b>
E5 Dam access	39.85	Consumers Power Dr	0
<b>Other Work Sites</b>			
Staging Yard 1	NA	NA	
Staging Yard 2	NA	NA	
Staging Yard 3	NA	NA	8
Staging Yard 5	NA	C3.2	
B5	NA	NA	

### 2h.3.2.2 Soil Staging and Decontamination Areas

Table 2h-3 identifies the location and number of verification soil samples collected and analyzed for decommissioning of Soil Staging and Decontamination Areas during November 2010.

**Table 2h-3**  
**Line 6B; Marshall, MI**  
**List of Soil Staging and Decontamination Areas**

<b>Site Name</b>	<b>Decommissioning Status</b>	<b>Number of Sample Results Received in November 2010</b>
<b>Soil Staging Area A</b>		
Cell 1	Awaiting closure	0
Cell 2	2011	0
Area A Decon areas	2011	
Cell 3	Awaiting closure	1
Cell 4	2011	0
Cell 5	2011	2
Cell 6	Awaiting closure	13
Cell 7	Awaiting closure	0
Cell 8	Awaiting closure	0
Oily Mat Storage Area	Awaiting Closure	0
Balance of Total Soil Staging Area A	2011	0
<b>Yard 4 Staging Area</b>		
Cell 9	Decommissioned	39
Cell 10	Decommissioned	
Cell 11	Decommissioned	
Cell 12/decon area	Decommissioned	
Support Areas	Awaiting Closure	0
<b>Frac Tank City</b>		
FTC decon area	2011	0
<b>Area C0.5</b>		
C0.5 decon area	2011	0

## **2h.4 Reports**

*Enbridge Line 6B MP 608 Release Marshall, Michigan Public Park/ Access Assessment Report*, detailing work completed in accordance with the Work Plan described in 2h.3.4.1 was submitted to the EPA and MDNRE on November 23, 2010 (Attachment 2h-2).

## **2h.5 Work Planned for December 2010**

A supplement to the Public Parks/ Access Areas Report named in Section 2h.4 is planned for submittal in December 2010. Planned activities include verification soil sampling for Public Parks/Access Areas where one or more soil samples exceeded Michigan Part 201 criteria. Decommissioning of River Access and Other Work Areas is also planned to continue in the December 2010 reporting period.

## **2i.0 Recovery of Submerged Oil and Oil Contaminated Sediments in the Kalamazoo River System**

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### **2i.1 Work Completed - Introduction**

This section describes the submerged oil investigation and recovery activities at six Operations and Maintenance (O&M) Sites in the Kalamazoo River. The areas include MP 5.55 North, MP 10.75 L2, MP 13.6 Lonely Tree, MP 21.5, MP 28.25, and MP 33.00 L1. Each summary includes a brief description of O&M inspection, post-O&M inspection investigation and results, recovery recommendations, and the recovery actions taken. Unless otherwise noted, the Standard Operating Procedure (SOP) used for previous recovery activities (Attachment 2i-6) was applied to activities for each site.

Individual sediment sample and analytical fraction results are compiled in Attachment 2i-1. Attachment 2i-2 provides corresponding mapping for Total Petroleum Hydrocarbon (TPH) results at each sample location. These results are from samples collected on September 2, to October 1, 2010. On each map, the TPH concentration is shown at each sample location. In addition, a table is included that lists the individual oil, diesel, and gas range organic concentrations for each sample.

### **2i.2 MP 5.55 North**

#### **2i.2.1 Introduction and Site Description**

MP 5.55 North is a shallow cove on the right descending bank of the Kalamazoo River, looking downstream, approximately 1,400 feet upstream of Ceresco Dam. The approximate areal extent of this location is 0.55 acres. The depth to water ranges from 0 to 2 feet near shore, graduating to deeper water near the former silt curtain. The soft sediment thickness in this area ranges from 1 foot to 2 feet and is underlain by dense material.

#### **2i.2.2 O&M Inspection Activities**

A November 4, 2010 O&M Inspection conducted by Enbridge and USEPA/START personnel indicated the presence of heavy sheen. The field team was notified and on November 9, 2010 poling indicated the presence of moderate and heavy sheen and globules in areas close to the shoreline. The November 4, 2010 O&M Oil Sheen/Action Level Criteria document and the



October 29, 2010 Submerged Oil Field Observation Flow Chart (Attachments 2i-3 and 2i-4) were followed. Attachment 2i-5 provides mapping of the poling results.

### **2i.2.3 Recovery Actions**

On November 19, 2010, the shoreline and all containment boom were lined with absorbent boom. The two areas were then divided into numbered cells; operational area east numbered 1-5 and area west numbered 6-11 (Attachment 2i-7). As a contingency measure, a surface water collection point located approximately 200 yards downstream from the work location was installed to collect any leakage.

On November 20, 2010, sediment agitation activities commenced. An Enbridge Site Monitor and Weston/EPA START Observer were present throughout the course of operations and documented tasks performed. From November 19 to November 23, all work activity was concentrated in the eastern operational area. On November 22, stained vegetation together with other evidence of bank slope contamination was noted along the right descending bank of Cell 2. This was addressed with a combination of raking and flushing, however, sheen and globules remained present in standing water. Work was suspended temporarily for the Thanksgiving Holiday. Work resumed on November 29 with operations focused in the eastern area. On November 30, additional signs of bank slope contamination were found along Cell 2 and Cell 4 with clumps of visible tar. The clumps were collected; the entire bank slope was raked and flushed.

## **2i.3 MP 10.75 L2**

### **2i.3.1 Introduction and Site Description**

MP 10.75 L2 is an oxbow on the left descending bank of the river approximately 0.15 acres in size. The water depth is less than 1 foot, with 0.1 to 1.0 feet of soft sediment over sand.

### **2i.3.2 O&M Inspection Activities**

A November 18, 2010 flyover indicated the presence of oil sheen in the vicinity of MP 10.75 L2. A field investigation was conducted (Attachments 2i-3 and 2i-4). On November 19, 2010 poling indicated the presence of moderate sheen and globules and some areas of slight sheen and globules. There was one location of heavy sheen and globules observed near the center of the area along the right bank (Attachment 2i-5).

### **2i.3.3 Recovery Actions**

Recovery actions were completed in December and will be reported in the December monthly report.

## **2i.4 MP 13.6 Lonely Tree**

### **2i.4.1 Introduction and Site Description**

MP 13.60 Lonely Tree is an eddy area on the left descending river bank of about 0.15 acres.

This depositional area has low flow, water depth ranging from 0.0 feet to 2.5 feet, and 0.1 foot to 2.0 feet of soft sediment over sand.

### **2i.4.2 O&M Inspection Activities**

The overbank assessment on November 3, 2010 indicated the presence of sheen in the area of MP 13.60 Lonely Tree. The field team was notified and an investigation commenced (Attachments 2i-3 and 2i-4). On November 1 and 13, 2010 poling indicated the presence of moderate and heavy sheen and globules adjacent to the Lonely Tree and along the left descending bank southwest of the tree (Attachment 2i-5).

### **2i.4.3 Recovery Actions**

Work was conducted from November 19, 2010 through November 21, 2010. Soft boom containment was installed throughout the area within the hard boom containment forming 3 cells (Attachment 2i-7).

A Site Monitor and Weston/EPA START Observer were present throughout operations and documented tasks performed. Water washing and recovery technology described in the SOP were performed in the area (Cell 1 through Cell 3) from November 19 through November 21. Submerged oil recovery activity in this area was concluded on November 21, and all absorbent boom was removed. See Attachment 2i-8 for a photo log of the activities in this area. This site will continue to be monitored throughout the winter and will be reevaluated in Spring 2011.

## **2i.5 MP 21.5**

### **2i.5.1 Introduction and Site Description**

MP 21.5 is an open water meander with a constriction that promotes deposition. The oxbow is on the right descending bank facing downstream. The oxbow supports a fairly high quality habitat; mostly an open water area. The approximate areal extent of this priority location is 2.5

acres. The depth to water is 0 to 1 foot, slightly deeper in the center of the channel. The sediment bed consists of soft sediment over sand.

### **2i.5.2 O&M Inspection Activities**

A November 11, 2010 fly-over of the site identified sheen on the water surface at the western leg of the oxbow at MP 21.5. A qualitative assessment by poling was completed. (Attachments 2i-3 and 2i-4). Poling conducted on November 12, 2010 indicated the presence of moderate and heavy sheen and globules throughout the entire oxbow at MP 21.5 (Attachment 2i-5).

### **2i.5.3 Recovery Actions**

Work was conducted from November 22, 2010 to December 6, 2010. Containment was installed at both ends of the oxbow. (Attachment 2i-6). Soft boom containment was installed throughout the channel within the area contained by hard boom (Attachment 2i-7).

A Site Monitor and Weston/EPA START Observer were present throughout the course of operations and documented tasks performed. Water washing and recovery technology described in the SOP were performed in the area on November 22 and November 23. Recovery activity was suspended for Thanksgiving from November 24 through November 28. Submerged oil recovery activity resumed on November 29 and continued beyond the end of the month. This site will continue to be monitored throughout the winter and will be reevaluated in spring 2011.

## **2i.6 MP 28.25**

### **2i.6.1 Introduction and Site Description**

MP 28.25 is an oxbow on the right descending bank and about 1.5 acres in extent. The water depth currently ranges from less than 1 foot to up to 2 feet in some areas with up to 2 feet of soft sediment overlying sand. Water flow is stagnant.

### **2i.6.2 O&M Inspection Activities**

A November 5, 2010 O&M inspection conducted by Enbridge and USEPA/START personnel indicated the presence of heavy sheen in the back channel area of the oxbow. The field team was notified and an investigation commenced (Attachments 2i-3 and 2i-4). On November 6, 2010, poling indicated the presence of predominantly moderate sheen with one location of heavy sheen and globules and three areas of slight sheen in some portions of the site (Attachment 2i-5).

### **2i.6.3 Recovery Actions**

Work was conducted on November 11, 2010 and November 17, 2010. Containment was installed throughout the channel (Attachment 2i-7). Submerged logs and debris were removed to grant airboat access to the channel for water washing activities. Soft boom containment was established throughout the open water portion of the oxbow from the “Hot Spot” (area of heavy oil concentration, right descending bank, Cell 1a) through the downstream mouth where hard boom containment was in place (Attachment 2i-7). The upstream portion (approximately 1/3 of the oxbow) was a mudflat and was not treated at this time, though the area was poled during poling surveys.

On November 11, 2010, sediment agitation activities commenced. An Enbridge Site Monitor and Weston/EPA START Observer were present throughout the course of operations and documented tasks performed. From November 11-14 water washing was performed in Cells 2-7. Due to safety concerns, work boats were not able to enter Cell 1a and Cell 1b where the heavier concentration of oil was found. As a result, Cell 1a and Cell 1b were treated by workers walking the channel using water washing and flushing.

Recovery of surface oil generated by sediment agitation was accomplished using sorbent pads, pom-pom, leaf blowers, and skimmer poles. Cells were also swept with sorbent boom to corral oil and saturated pads. Collection was hampered by partially-submerged brush and very soft sediment that made walking within the channel difficult.

On Sunday, November 14, a poling survey was conducted along the north channel/mud flat between the river and the back channel hot spot and throughout Cell 2, Cell 3, and Cell 4. Sheen had been noted along the mud flat area by observers on foot and by helicopter flyovers. Following further inspection, it was determined to be almost exclusively organic. Poling data showed improved conditions throughout the poled area, however, moderate sheen was still noted in the hot spot area.

A temporary suspension of Submerged Oil Task Force operations was scheduled for November 15 and 16 due to the opening of shotgun hunting season. All equipment and materials were removed from the site in preparation for the stand down.

On November 17, 18 and 19 work resumed with water washing and flushing in Cell 1a and Cell 1b. Mid-Recovery poling surveys in this area suggest the possibility of re-contamination of the channel by oil leaching from the bank side. On November 19, Cell 5, Cell 6, and Cell 7 received additional washing to address hot spots indicated by Mid-Recovery poling surveys.

Submerged oil recovery activities at MP 28.25 were suspended at midday on November 19, 2010 since other high-priority sites required work. See Attachment 2i-8 for a photo log of the activities in this area. The area was not fully remediated and EPA inspection or sign-off was not performed. Cell 1a and Cell 1b were studied and targeted for possible excavation to address the contaminated bank side. All boom was removed from the area in accordance with the winter operations plan. This site will continue to be monitored throughout the winter and will be reevaluated in spring 2011.

## **2i.7 MP 33.00 L1**

### **2i.7.1 Introduction and Site Description**

MP 33.00 L1 is a backwater area on the left descending river bank of about 0.13 acres. This backwater area is a stagnant open water channel with dead branches in the water. The water depth is less than 1 foot, with 0.5 foot to 1.5 feet of soft sediment over sand.

### **2i.7.2 O&M Inspection Activities**

A November 4, 2010 O&M inspection conducted by Enbridge and USEPA/START personnel indicated the presence of heavy sheen in the vicinity of 33.00 L1. An investigation was conducted (Attachments 2i-3 and 2i-4). On November 6, 2010, poling indicated the presence of moderate sheen and globules and some areas of slight sheen and globules (Attachment 2i-5).

### **2i.7.3 Recovery Actions**

Work was conducted on November 17, 2010 and November 18, 2010. A field crew installed containment around the backwater area containing areas of moderate sheening and globules. Soft boom containment was established within hard boom containment, creating 2 working cells (Attachment 2i-7). As a contingency measure, a surface water collection point located approximately 200 yards downstream from the work location was installed to collect any leakage.

A Site Monitor and Weston/EPA START Observer were present throughout the course of operations and documented all tasks performed. Water washing and recovery techniques described in the SOP were performed in the area on November 17 and 18. Operations concluded in this area and the absorbent boom was removed. See Attachment 2i-8 for a photo log of activities in this area. EPA sign-off occurred on December 6, 2010 (Attachment 2i-9). This site will continue to be monitored throughout the winter and will be reevaluated in spring 2011.

## **2i.8 Work Planned for December 2010**

Submerged Oil activities planned for December 2010 include the support of the Operations and Maintenance (O&M) group at priority sites still needing recovery of submerged oil. Activities include field qualitative assessments by poling, preparation of work plans and oversight of field activities of flushing and raking per approved work plans. The Submerged Oil group will also prepare a monthly deliverable summarizing recent activities and provide analytical data from previous quantitative assessments. Winter Work Plans will also be prepared in December 2010 in anticipation of further recovery activities at O&M locations in January 2011.

## 2j.0 Waste Disposal – Process & Activity Summary

### 2j.1 Work Completed - Introduction

This section describes the procedures that were used to manage wastes generated from spill response activities from November 1, 2010 – November 30, 2010. Waste streams generated include but are not limited to contaminated water, debris, soil, trash, and miscellaneous other small volume materials. All waste manifests can be found in Attachment 2j-1. All waste tickets can be found in Attachment 2j-2. Waste Analytical Data Reports can be found in Attachment 2j-3.

### 2j.2 Waste Generation and Shipment Information

Table 2j-1 is a summary of waste shipments that occurred during the month. The processes that generate each waste stream are discussed further in the sections that follow. The table in Attachment 2j-4 provides a list of transporters and disposal facilities that were used for each waste. The table in Attachment 2j-5 provides a summary of the cumulative amount of each waste generated during response exercises through November 30, 2010.

Waste Description	Shipped to:	Quantity Shipped:	Unit of Measure:
Non-Hazardous Soil	Westside Recycling Three Rivers, MI	7,780	yd <sup>3</sup>
Hazardous Soil	Envirosafe Services Oregon, OH	2,010	yd <sup>3</sup>
Geotube Sediment	Westside Recycling Three Rivers, MI	4,302	yd <sup>3</sup>
Hazardous Water	Dynecol Detroit, MI	470,663	gal
Non-Hazardous Water	Plummer's Environmental Byron Center, MI	18,600	gal
Non-Hazardous Debris	C&C Landfill Marshall, MI	97	Tons
Lab Sample Water	Safety Kleen Smithfield, KY	2	drums
Lab PPE and sampling equipment.	Safety Kleen Smithfield, KY	2	drums
Stockbridge, MI Terminal Hydrotest Water	Environmental Quality Co. Detroit, MI	719,800	gal
Griffith, IN Terminal Oil/Water Mixture	Clean Harbor's Rock Island, IL	0	gal

## **Table 2j-1 November 2010 – Waste Shipment Summary**

### **2j.2.1 Recovered Oil**

Recovered oil is no longer being generated from response activities. During the initial phase of the project, oil was segregated and recovered.

### **2j.2.2 Oily Debris**

Oily debris was segregated from non-oil debris and stored in lined, 20 cubic yard roll-off boxes. Various methods have been used to manage oily debris roll-offs during the course of the response. Previously, oily debris roll-offs were transported to Site A and dumped into soil cells. The debris was either mixed with soil or managed as a separate waste stream and loaded onto trucks from the soil cells.

Beginning on November 8, 2010, roll-offs were transported directly to C&C landfill in Marshall for disposal. This change was intended to reduce the volume of material being delivered to the soil cells and to expedite the decommissioning of select cells. Roll-off boxes continue to be generated through the end of November.

One out of every 10 roll-off boxes is sampled for TPH, and every 50 boxes a sample is collected for TCLP analysis.

### **2j.2.3 Trash**

Non-oily trash generated at field locations is transported to Republic's C&C Landfill in Marshall in lined 20 cubic yard roll-off boxes. Trash was not sampled and was not included in recovered oil calculations. The non-hazardous designation for the trash is based on generator knowledge.

### **2j.2.4 Soil**

Crude oil impacted soil is brought from various locations along the Talmadge Creek and Kalamazoo River to soil staging cells constructed in Site Site A. The soil is homogenized and, if necessary, solidified using lime dust. Once complete, soil piles are sampled following established protocol. Disposal arrangements are made based on analytical data. Non-hazardous soil is being disposed of at Waste Management's landfill in Three Rivers. Hazardous soil is being disposed of at Envirosafe Services landfill in Oregon, Ohio.



Hazardous soil generated in November 2010 was a result of mixing frac tank cleaning sludge with soil. The sludge contained a significant amount of oil. Soil staging cells remain active.

### **2j.2.5 Ceresco Dam Dredging Sediment**

Kalamazoo River sediment generated from the dredging activities upstream of the Ceresco Dam was dewatered using geotubes near the point of generation. The dredging sediment did not require further solidification and was transported directly to Westside RDF landfill in Three Rivers, Michigan. Geotubes were sampled and analyzed by Merit Laboratories.

Dredging activities were discontinued in October. Shipping of geotube sediment continued until November 9, 2010. There was no further activity in the dewatering area.

### **2j.2.6 Miscellaneous Small Quantity Waste Streams**

Miscellaneous small waste streams have been generated throughout the project. These wastes have primarily been stored in drums and include, but are limited to, used oil, batteries, and lab samples. These have been characterized individually and disposed of at approved facilities.

### **2j.2.7 Oil/Water Mixture at Griffith, Indiana**

Recovered crude oil collected at the Marshall, Michigan release site was trucked to Enbridge's Griffith, Indiana Terminal starting with the initial response activities and concluding on October 13, 2010. This recovered mix of crude oil and water collected from Kalamazoo River and Talmadge Creek water was off-loaded at the Griffith terminal and piped over to Tank 1605 (T1605) at the adjacent Hartsdale terminal. T1605 is an approximately 4.0 million gallon internal floating roof, aboveground storage tank. A total of 2,171,813 gallons of crude oil/water mix was placed into T1605. A sample of the water fraction was drawn from the tank on September 13, 2010 by Superior Environmental Services and analyzed by ALS Labs (Holland, MI). Results of the sampling demonstrated the water was hazardous for benzene. As a result, the water was managed as a hazardous waste (D018) and was shipped to Clean Harbor's Rock Island TSD facility in Chicago. As of November 30, 2010, a total of 951,272 gallons of wastewater has been shipped to Clean Harbor's Rock Island TSD facility in Chicago.

All water and emulsified layer removal efforts have been completed for the T1605 tank at Griffith. T1605 held the recovered crude oil collected at the Marshall, Michigan release site and

transferred to Enbridge's Griffith, Indiana Terminal starting with the initial response activities. A total of 951,272 gallons of the water layer was removed and treated by Clean Harbors at their East Chicago facility, and the emulsified layer was trucked and treated by Beaver Oil Company at their Hodgkins, Illinois facility. Oily waste solids generated during the water/emulsified layer removal efforts were properly disposed by Safety-Kleen.

### **2j.2.8 Oil/Water Mixture at Stockbridge, Michigan**

Line 6B was being hydrotested at the time of the release. The hydrotest of Line 6B generated approximately 2.5 million gallons of oil contaminated water. This water was stored in Tank 80 (T80) at Enbridge's Stockbridge Terminal, which is located along Line 6B approximately 50 miles northeast of Marshall MI. T80 is an approximately 4.0 million gallon internal floating roof, aboveground storage tank. T80 normally stores crude oil, but was temporarily taken out of service to store the hydrotest water in late August. A sample of the hydrotest water was drawn from the tank on October 6 and sampled by Merritt Labs (Lansing MI). Results of the sampling demonstrated the water was hazardous for benzene. As a result, the water is being managed as a hazardous waste (D018) and is being shipped to EQs TSD facility in Detroit. As of November 30, approximately 2.2 MM gallons of wastewater have been shipped to EQ.

A hot oiler has been used in Stockbridge to enhance the breaking of oil/water emulsion. Work continued at Stockbridge through the end of November.

### **2j.3 Recovered Oil Calculations**

The quantity of oil contained in waste materials has been calculated since the onset of the project. The quantity of oil is based on the concentration of oil in the waste and the total amount of waste shipped. Recovered oil values are determined for each waste stream individually. A recovered oil summary through November 30, 2010 is provided in Attachment 2j-6.

### **2j.4 Work Planned for December 2010**

Waste disposal activities will continue according to the approved work plans through December 2010.

## **2k.0 Cultural Resource Assessment Activities**

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### **2k.1 Work Completed**

The summary below details all cultural resources work conducted during the month of November, 2010 and is provided pursuant to the Order, as supplemented, for compliance under Section 311(c) of the Clean Water Act issued by the EPA (see Order dated July 27, 2010, Docket No. CWA 1321-5-10-001).

#### **2k.1.1 Documents Submitted to the EPA:**

- Section 14.0 Cultural Resource Assessment Activities (redacted and non-redacted version), submitted November 24, 2010 (not attached).
- Source Area Response Plan and Response Plan for Downstream Impact Area with revisions as directed by the EPA in a letter dated November 18, 2010, submitted on November 29, 2010. (see Attachment 2k-1)

#### **2k.1.2 Communication with Office of State Archaeologist**

Ongoing communication with the Office of the State Archaeologist (OSA) and the State Historic Preservation Office (SHPO) included the following (copies of this correspondence can be found in Attachment 2k-2):

- Telephone call on November 1, 2010 from Enbridge to the OSA requested their preferred format for the electronic copy of the October 22, 2010 submittal to the EPA.
- Submittal of an electronic copy of the EPA October 22, 2010 submittal to the OSA and SHPO on November 2, 2010.
- A telephone call on November 4, 2010 from the SHPO requesting a project update on bridge cleaning methods for the 12 Mile Road Bridge, which is listed in the National Register of Historic Places.
- A letter to the SHPO and OSA identifying the EPA's role in the Section 106 project and providing the contact information for the EPA Region 5 legal counsel, letter dated November 23, 2010.

### **2k.1.3 Communication with Interested Parties**

Ongoing communication with interested parties included the following (copies of this correspondence can be found in Attachment 2k-3):

- Telephone call on November 1, 2010 from Enbridge to the Assistant Engineer at the Calhoun County Road Commission regarding bridges.
- Email correspondence from Enbridge to the Assistant Engineer at the Calhoun County Road Commission requesting information on jurisdiction of bridges over the Kalamazoo River, email dated November 2, 2010.
- Email correspondence from Enbridge to the Assistant Engineer at the Calhoun County Road Commission requesting information on jurisdiction of bridges over Talmadge Creek and the Kalamazoo River.
- Email correspondence from Calhoun County Road Commission providing information on bridges, email dated November 2, 2010.
- Email correspondence to Battle Creek Heritage, a non-profit preservation organization in Battle Creek, requesting input on their concerns regarding above-ground resources in Battle Creek, email dated November 11, 2010.
- Email correspondence to the Michigan Historic Preservation Network, a statewide preservation organization dedicated to preserving Michigan's rich cultural and architectural heritage, requesting comments on Enbridge's response efforts as they relate to both the listed and possibly eligible above-ground and archaeological resources within the cleanup area, dated November 12, 2010.
- Email correspondence from the Michigan Historic Preservation Network commenting that Enbridge has "fulfilled their charge to assure that all historic resources, both above-ground and below, are recognized and considered during the cleanup," email dated November 12, 2010.
- A letter to the Michigan Department of Transportation Historian identifying the EPA's role in the Section 106 process and providing contact information for the EPA Region 5 legal counsel, letter dated November 23, 2010.

### 2k.1.4 Communication with Native American Tribes

Ongoing communication with Native American Tribes included the following (copies of this correspondence can be found in Attachment 2k-4):

- Telephone calls to the Match-e-be-nash-she-wish Band of Potawatomi were made on November 5, 16, and 22 requesting comments regarding potential impacts to tribally significant cultural resources; voice messages were left for Mr. Ed Pigeon.
- A letter to the Match-e-be-nash-she-wish Band of Potawatomi identifying the EPA's role in the Section 106 process and providing contact information for the EPA Region 5 tribal liaison, letter dated November 23, 2010.
- A letter to the Nottawaseppi Huron Band of Potawatomi identifying the EPA's role in the Section 106 process and providing contact information for the EPA Region 5 tribal liaison, letter dated November 23, 2010.
- A letter to the Pokagon Band of Potawatomi identifying the EPA's role in the Section 106 process and providing contact information for the EPA Region 5 tribal liaison, letter dated November 23, 2010.

### 2k.1.5 Cultural Resources Surveys

Cultural resources survey was conducted at eight (8) locales prior to ground disturbing activities. No previously or newly recorded archaeological resources were identified in these survey areas. These locations are identified in Table 2k-1 and are depicted on the map sheets in Attachment 2k-5.

<b>Survey Area Number</b>	<b>MP (river bank)</b>	<b>Division</b>	<b>Date</b>	<b>Map Sheet Number</b>
15	36.0 L	E	11/1/2010	18
16	36.0 L	E	11/1/2010	18
17	37.0 L	E	11/1/2010	18

18	37.0 L	E	11/1/2010	18
19	4.5 L	C	11/9/2010	4
20	10.7 L	C	11/9/2010	8
21	10.75 R	C	11/19/2010	8
22	6.0 R and L	C	11/22/2010	5

**Table 2k-1 Cultural Resources Survey Areas in November 2010.**

## **2k.2 Work Planned for December 2010**

In December, work to identify historic properties will continue in areas where future activities are planned by completing Phase Ib survey for all appropriate locations as stipulated in the *Supplement to Source Area Response Plan* (modification dated November 29, 2010) and *Supplement to Response Plan for Downstream Impact Area* (modification dated November 29, 2010) (see Attachment 2k-1).

## 3.0 Conclusion

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As described in this report, Enbridge, during the month of November 2010, continued to conduct activities required under the EPA Order and Supplemental Order and to conduct activities pursuant to the DNRE Order. The work conducted and data received during December 2010 will be included in the monthly report to be submitted on January 27, 2011.